



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,611	10/06/2003	Tapesh Yadav	037768-0137	3294
22428	7590	08/07/2007	EXAMINER	
FOLEY AND LARDNER LLP			LORENZO, JERRY A	
SUITE 500			ART UNIT	
3000 K STREET NW			PAPER NUMBER	
WASHINGTON, DC 20007			1755	
			MAIL DATE	DELIVERY MODE
			08/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/679,611

Applicant(s)

YADAV ET AL.

Examiner

Jerry A. Lorengo

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

(1)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 32, 33, 38 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,944,985 to Alexander et al.

Regarding applicant claims 32 and 33, Alexander et al. disclose ultra-fine particles having a size in the range of 5 to 500 nm (column 1, lines 10-12) which may comprise crystalline or amorphous materials as well as metals (such as copper), ceramics as well as their composites (column 1, lines 16-17; and column 6, lines 21-40). Alexander et al. also specifies particle sizes less than 100 nm (column 15, line 44) and 200 nm (column 13, lines 24-25).

Regarding applicant claims 38 and 40, Alexander et al. also disclose that the ultra-fine particles may be used to manufacture products such as conductive paints, pastes or inks (column 13, lines 41-47).

(2)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 1755

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,944,985 to Alexander et al., as set forth in section (1), above.

Alexander et al., as set forth in section (1), above disclose that the ultra-fine particles may be used to manufacture products such as conductive paints, pastes or inks, they do not specifically disclose, as per applicant claims 39 and 41, the formation of a print using these products.

Nonetheless, it is known in the printing arts that inks, for example, are suitable in the formation of printed matter and one skilled in the art would have utilized the ink product of Alexander et al., by known printing methods and with no change to their respective functions and/or operations, thus yielding the predictable result of a printed article.

(3)

Claims 17-31 and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,944,985 to Alexander et al. in view of U.S. Patent No. 4,292,029 to Craig et al. or U.S. patent No. 5,718,047 to Nakayama et al.

Regarding applicant claims 17 and 24, Alexander et al. disclose ultra-fine particles having a size in the range of 5 to 500 nm (column 1, lines 10-12) which may comprise crystalline or amorphous materials as well as metals (such as copper), ceramics as well as their composites (column , lines 16-17; and column 6, lines 21-40). Alexander et al. also disclose that the ultra-fine particles may be used in conductive paints, pastes or inks (column 13, lines 41-47).

Although Alexander et al. disclose that the ultra-fine particles are substantially spherical in shape (column 6, lines 35-40), they do not specifically disclose, as per applicant claims 17 and 24 that the particles have an aspect ration of greater than 1.

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of invention to have provided the ultra-fine particles of Alexander et al. with aspect ratios greater than 1 motivated by the fact that Craig et al. and/or Nakayama et al., both also drawn to coating products, disclose that such products may utilize inorganic, metallic or composite filler particles having a size of between 5 and 500 nm (Craig et al., column 6, lines 42-52) in the form of fibers,

Art Unit: 1755

whiskers or plates, or spheres – forms which would have aspect ratios of greater than 1 (Craig et al. at column 6, lines 32-52; Nakayama et al. at column 5, lines 58-65).

Regarding applicant claims 18-20 and 25-27, both Craig et al. and/or Nakayama et al. disclose utilize inorganic, metallic or composite filler particles (nano-particles in the case of Craig et al.) having a size of between 5 and 500 nm (Craig et al., column 6, lines 42-52) in the form of fibers, whiskers or plates, or spheres – forms which would have aspect ratios of greater than 1 (Craig et al. at column 6, lines 32-52; Nakayama et al. at column 5, lines 58-65).

Regarding applicant claims 21, 22, 28 and 30, Alexander et al. disclose that the ultra-fine particles may be used in conductive paints, pastes or inks (column 13, lines 41-47).

Regarding applicant claims 23, 30 and 31, Alexander et al. also disclose that the ultra-fine particles may comprise crystalline or amorphous materials as well as metals, ceramics and their composites (column 1, lines 16-17). Alexander et al. disclose that suitable materials include: silica carbon, alumina, tin oxide, zirconia, metal powders such as molybdenum, tungsten, copper, nickel, iron, cobalt and alloys of these metals or these with other metals water insoluble metal silicates (e.g., zinc silicate, lead silicate, aluminum silicate, calcium aluminum silicate, magnesium aluminum silicate, zirconium silicate, sodium aluminum silicate, potassium aluminum silicate and rare earth metal silicates), metal oxides, complex oxides or other material which may or may not be inert and which can be processed into ultra-fine particles (column 6, lines 21-36).

Regarding applicant claims 34-37, Alexander et al., as set forth, above, disclose that the ultra-fine particles may be used, as per applicant claims 34 and 36, to manufacture products such as conductive paints, pastes or inks, they do not specifically disclose, as per applicant claims 35 and 37, the formation of a print using these products.

Nonetheless, it is known in the printing arts that inks, for example, are suitable in the formation of printed matter and one skilled in the art could have utilized the ink product of Alexander et al., by known printing methods and with no change to their respective functions and/or operations, thus yielding the predictable result of a printed article.

(4)

Response to Arguments

Applicant's arguments filed June 28, 2006, with respect to claims 17-41, have been considered but are moot in view of the new ground(s) of rejection. Nonetheless, the examiner would like to take this opportunity to address some of the Applicant's more salient arguments.

With regards to the Alexander et al. reference, the Applicant argues that the particles disclosed therein do not overlap in size with those set forth in the instant invention and secondly, that Alexander et al. teaches away from the claims of the instant invention given their disclosure that the particles are preferably substantially spherical.

Regarding the first argument, the Examiner respectfully disagrees. The instant claims require a particle size of less than 250 nm and more preferably less than 100 nm. As set forth above and in the previous office action Alexander et al. disclose ultra-fine particles having a size in the range of 5 to 500 nm (column 1, lines 10-12). The Examiner respectfully submits, therefore, that the particles disclosed by Alexander et al. do overlap as well as anticipate the size set forth in the instant invention. Secondly, the Examiner respectfully submits that Alexander et al. does not teach away from the claimed particles having an aspect ratio of greater than 1 given the fact that the "substantially spherical" particles of Alexander are a preferred embodiment. Nonetheless, the Examiner has combined Alexander et al. with the references to Craig et al. and Nakayama et al. to illustrate the obviousness of utilizing other particle morphologies in the invention of Alexander et al.

Lastly, the Applicant argues that there is no reason to modify the Alexander et al. reference with the flakes, fiber or whiskers taught by Nakayama et al. because the level of skill in the art cannot be relied upon to provide the suggestion to combine references and that references cannot be combined or modified without a desirable reason. The Applicant further argues that,

Here, Alexander concerns a process for the electrolysis plating of easily reproducible metals onto ultrafine, usually inert, particles, . . . and admittedly fails to teach nanowhiskers, plates and fibers. Nakayama discloses fiber, whisker, or a flake (not on the nanoscale) but actually concerns a method of manufacturing an electrical junction box. It is respectfully submitted that there is no suggestion to combine the teachings of manufacturing an electrical junction box with electrolysis plating in order to arrive at an ink, let alone a reasonable expectation of success.

Art Unit: 1755

The Examiner respectfully submits that the applicant appears to be arguing that there is no specific suggestion or teaching in the references to combine the Alexander et al. and Nakayama et al. references. Nonetheless, the Examiner respectfully submits that KSR forecloses the argument that a specific teaching, suggestion or motivation is required to support a finding of obviousness.

(5)

Any inquiry concerning this communication should be directed to Jerry A. Lorengo at telephone number 571-272-1233.



J. A. LOBENGO
SUPERVISORY PATENT EXAMINER